

IN THE CLAIMS:

Amend Claim 17 as follows and add Claim 40:

Claims 1-16. Canceled.

17. (Currently Amended) An indicator for plasma sterilization comprising an ink containing

at least one type of colorless chromogenic fluoran pigment,

a coloring assistant comprising at least one compound having a dithiocarbamyl group, and

a binder for base material,

wherein said indicator is formed to undergo color tone change from colorless to color by hydrogen peroxide low temperature plasma sterilization.

18.(Previously presented) The indicator of Claim 17, wherein said coloring assistant additionally includes at least one compound having a mercapto group.

19.(Previously presented) The indicator of Claim 17, wherein said at least one compound having the dithiocarbamyl group exhibits low coloration promoting property in hydrogen peroxide vapor.

20.(Previously presented) An indicator for plasma sterilization, comprising

at least one type of colorless chromogenic fluoran pigment,

a coloring assistant,

a binder, and

a discoloration preventing agent for pigment colored by hydrogen peroxide plasma sterilization and comprising a polyphenol compound,
wherein the color tone change of the indicator is allowed to occur by the hydrogen peroxide low temperature plasma sterilization.

21. (Previously Presented) An indicator for plasma sterilization comprising an ink containing

at least one type of colorless chromogenic fluoran pigment,
a coloring assistant comprising at least one compound having a dithiocarbamyl group,

a binder for base material, and

a discoloration preventing agent for pigment colored by the hydrogen peroxide plasma sterilization and comprising a polyphenol compound,

wherein said indicator is formed to undergo color tone change by hydrogen peroxide low temperature plasma sterilization.

Claims 22-23. Canceled.

24.(Previously presented) The indicator of Claim 17, wherein said fluoran pigment is selected from at least one of

3,6-dimethoxyfluoran;

3-diethylamino-7-chlorofluoran;

3-diethylamino-benzo(a)fluoran;

4-amino-8-diethylamino-benzo(a)fluoran;
4-benzylamino-8-diethylamino-benzo(a)fluoran;
2-amino-8-diethylamino-benzo(a)fluoran;
2-mesidino-8-diethylamino-benzo(c)fluoran;
3-(N,N-diethylamino)-7-(N,N-dibenzylamino)fluoran;
3-diethylamino-7-alkyl(C8)aminofluoran;
2-(N-methyl-N-phenylamino)-6-(N-p-tolyl-N-ethylamino)fluoran;
3-pyrrolidono-7-(N,N-dibenzylamino)fluoran;
3-pyrrolidino-7-cyclohexylaminofluoran;
3-diethylamino-7-cyclohexylaminofluoran;
3-diethylamino-7-cyclohexyl-N-benzylaminofluoran;
2-anilino-3-methyl-6-diethylaminofluoran;
2-anilino-3-methyl-6-(N-ethyl-p-toluidino)fluoran;
2-p-toluidino-3-methyl-6-(N-ethyl-p-toluidino)fluoran;
3-(N-cyclohexyl-N-methylamino-6-methyl-7-anilino)fluoran;
3-dibutylamino-7-(o-chloroanilino)fluoran;
3-dibutylamino-7-fluoroanilino)fluoran; and
3-diethylamino-6-chloro-anilino)fluoran.

25.(Previously presented) The indicator of Claim 24, wherein said coloring assistant is selected from at least one of

tetramethylthiuram monosulfide;

tetramethylthiuram disulfide;

tetraethylthiuram disulfide;
tetra-n-butylthiuram disulfide;
N,N'-dimethyl-N,N'-diphenylthiuram disulfide;
dipentamethylenethiuram monosulfide;
dipentamethylenethiuram disulfide;
dipentamethylenethiuram tetrasulfide;
p-xylylene bis(N,N-diethyldithiocarbamate);
2-benzothiazolyl diethyldithiocarbamate; and
4-dimethylaminobenzylidene rhodamine.

26.(Previously presented) The indicator of Claim 17, wherein said coloring assistant is selected from at least one of

tetramethylthiuram monosulfide;
tetramethylthiuram disulfide;
tetraethylthiuram disulfide;
tetra-n-butylthiuram disulfide;
N,N'-dimethyl-N,N'-diphenylthiuram disulfide;
dipentamethylenethiuram monosulfide;
dipentamethylenethiuram disulfide;
dipentamethylenethiuram tetrasulfide;
p-xylylene bis(N,N-diethyldithiocarbamate);
2-benzothiazolyl diethyldithiocarbamate; and
4-dimethylaminobenzylidene rhodamine.

27.(Previously presented) The indicator of Claim 18, wherein said mercapto-containing compound is selected from at least one of

2-mercaptobenzothiazole;
2-mercaptobenzoimidazole;
2-mercaptobenzoxazole;
3-mercapto-1,2,4-triazole;
3-mercapto-4-methyl-4H-1,2,4-triazole;
2-mercaptothiazoline;
5-methyl-1,3,4-thiadiazole-2-thiol;
1-phenyl-5-mercapto-1H-tetrazole;
2-amino-5-mercapto-1,3,4-thiadiazole;
2,5-dimercapto-1,3,4-thiadiazole;
5-mercapto-1-methyltetrazole; and
mercaptosuccinic acid.

28.(Previously presented) The indicator of Claim 27, wherein said dithiocarbamyl-containing compound is selected from at least one of

tetramethylthiuram monosulfide;
tetramethylthiuram disulfide;
tetraethylthiuram disulfide;
tetra-n-butylthiuram disulfide;
N,N'-dimethyl-N,N'-diphenylthiuram disulfide;
dipentamethylenethiuram monosulfide;

dipentamethylenethiuram disulfide;
dipentamethylenethiuram tetrasulfide;
p-xylylene bis(N,N-diethyldithiocarbamate);
2-benzothiazolyl diethyldithiocarbamate; and
4-dimethylaminobenzylidene rhodamine.

29. (Previously presented) The indicator of Claim 28, wherein said binder is selected from at least one of

cellulose acetate;
cellulose butyrate;
cellulose nitrate;
ethyl cellulose;
hydroxypropyl cellulose;
poly(vinyl acetate);
vinyl acetate/vinyl pyrrolidone copolymer;
poly(vinyl butyral); and
a styrene/acrylonitrile copolymer.

30. (Previously presented) The indicator of Claim 17, wherein said binder is selected from at least one of

cellulose acetate;
cellulose butyrate;
cellulose nitrate;

ethyl cellulose;
hydroxypropyl cellulose;
poly(vinyl acetate);
vinyl acetate/vinyl pyrrolidone copolymer;
poly(vinyl butyral); and
a styrene/acrylonitrile copolymer.

31.(Previously presented) The indicator of Claim 24, wherein said binder is selected from at least one of

cellulose acetate;
cellulose butyrate;
cellulose nitrate;
ethyl cellulose;
hydroxypropyl cellulose;
poly(vinyl acetate);
vinyl acetate/vinyl pyrrolidone copolymer;
poly(vinyl butyral); and
a styrene/acrylonitrile copolymer.

32.(Previously presented)The indicator of Claim 25, wherein said binder is selected from at least one of

cellulose acetate;
cellulose butyrate;

cellulose nitrate;
ethyl cellulose;
hydroxypropyl cellulose;
poly(vinyl acetate);
vinyl acetate/vinyl pyrrolidone copolymer;
poly(vinyl butyral); and
a styrene/acrylonitrile copolymer.

33.(Previously presented)The indicator of Claim 26, wherein said binder is selected from at least one of

cellulose acetate;
cellulose butyrate;
cellulose nitrate;
ethyl cellulose;
hydroxypropyl cellulose;
poly(vinyl acetate);
vinyl acetate/vinyl pyrrolidone copolymer;
poly(vinyl butyral); and
a styrene/acrylonitrile copolymer.

34.(Previously presented) The indicator of Claim 20, wherein said polyphenol compound is selected from at least one of

diphenol acid;

phenolphthalein;
bis(4-hydroxyphenyl)propane;
1,1-bis(4-hydroxyphenyl)cyclohexane;
bis(4-hydroxyphenyl)sulfone;
bis(4-hydroxyphenyl)sulfide;
9,9-bis(4-hydroxyphenyl)fluorene;
4,4'-(1- α -methylbenzylidene)bisphenol;
 α , α' -bis(4-hydroxyphenyl)-1,4-diisopropylbenzene;
4,4'-bisbutylidenebis(3-methyl-6-tertbutylphenol);
 α , α , α' -tris(4-hydroxyphenyl)-1-ethyl-4-isopropylbenzene;
oligomers of 4-phenylphenol and formaldehyde; and
polyvinylphenol(poly(p-hydroxystyrene)).

35.(Previously presented) The indicator of Claim 17, comprising

0.1 to 1 part of said pigment,

0.5 to 6 parts of said coloring assistant

10 to 30 parts of said binder, and

70 to 85 parts of a solvent.

36.(Previously presented) The indicator of Claim 17 wherein polyethylene synthetic paper is used as the base material.

37. (Previously Presented) The indicator of Claim 21, wherein said coloring assistant additionally includes at least one compound having a mercapto group.

38. (Previously Presented) The indicator of Claim 21, wherein said at least one compound having the dithiocarbamyl group exhibits low coloration promoting property in hydrogen peroxide vapor.

39. (Previously Presented) The indicator of Claim 21, wherein said pigment consists of fluoran pigment.

40. (New) The indicator of Claim 17, wherein the color tone change occurs by opening of a lactone ring in said fluoran pigment.